

## **STIC Biotechnology Systems Branch**

### **RAW SEQUENCE LISTING** **ERROR REPORT**

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 10/069,381  
Source: 1 Fw16  
Date Processed by STIC: 2/1/06

THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.

PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:

- 1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,
- 2) TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY

FOR CRF SUBMISSION AND PATENTIN SOFTWARE QUESTIONS, PLEASE CONTACT MARK SPENCER, TELEPHONE: 571-272-2510; FAX: 571-273-0221

TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE **CHECKER VERSION 4.4.0 PROGRAM**, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW FOR ADDRESS:

**<http://www.uspto.gov/web/offices/pac/checker/chkrnote.htm>**

Applicants submitting genetic sequence information electronically on diskette or CD-Rom should be aware that there is a possibility that the disk/CD-Rom may have been affected by treatment given to all incoming mail.

Please consider using alternate methods of submission for the disk/CD-Rom or replacement disk/CD-Rom.

Any reply including a sequence listing in electronic form should NOT be sent to the 20231 zip code address for the United States Patent and Trademark Office, and instead should be sent via the following to the indicated addresses:

1. EFS-Bio (<<http://www.uspto.gov/ebc/efs/downloads/documents.htm>> , EFS Submission User Manual - ePAVE)
2. U.S. Postal Service: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
3. Hand Carry, Federal Express, United Parcel Service, or other delivery service (EFFECTIVE 01/14/05):  
U.S. Patent and Trademark Office, Mail Stop Sequence, Customer Window, Randolph Building, 401 Dulany Street, Alexandria, VA 22314

Revised 01/10/06

## Raw Sequence Listing Error Summary

<u>ERROR DETECTED</u>	<u>SUGGESTED CORRECTION</u>	SERIAL NUMBER: <u>10/069381</u>
ATTN: NEW RULES CASES: PLEASE DISREGARD ENGLISH "ALPHA" HEADERS, WHICH WERE INSERTED BY PTO SOFTWARE		
1 _____ Wrapped Nucleics Wrapped Aminos	The number/text at the end of each line "wrapped" down to the next line. This may occur if your file was retrieved in a word processor <b>after</b> creating it. Please adjust your right margin to .3; this will prevent "wrapping."	
2 _____ Invalid Line Length	The rules require that a line <b>not exceed</b> 72 characters in length. This includes white spaces.	
3 _____ Misaligned Amino Numbering	The numbering under each 5 <sup>th</sup> amino acid is misaligned. Do <b>not</b> use tab codes between numbers; use <b>space characters</b> , instead.	
4 <u>  </u> Non-ASCII	The submitted file was <b>not</b> saved in ASCII(DOS) text, as <b>required</b> by the Sequence Rules. <b>Please ensure your subsequent submission is saved in ASCII text.</b>	
5 _____ Variable Length	Sequence(s) _____ contain n's or Xaa's representing more than one residue. <b>Per Sequence Rules, each n or Xaa can only represent a single residue.</b> Please present the <b>maximum</b> number of each residue having variable length and indicate in the <220>-<223> section that some may be missing.	
6 _____ PatentIn 2.0 "bug"	A "bug" in PatentIn version 2.0 has caused the <220>-<223> section to be missing from amino acid sequences(s) _____. Normally, PatentIn would automatically generate this section from the previously coded nucleic acid sequence. Please manually copy the relevant <220>-<223> section to the subsequent amino acid sequence. <b>This applies to the mandatory &lt;220&gt;-&lt;223&gt; sections for Artificial or Unknown sequences.</b>	
7 _____ Skipped Sequences (OLD RULES)	Sequence(s) _____ missing. If intentional, please insert the following lines for <b>each</b> skipped sequence: (2) INFORMATION FOR SEQ ID NO:X: (insert SEQ ID NO where "X" is shown) (i) SEQUENCE CHARACTERISTICS: (Do not insert any subheadings under this heading) (xi) SEQUENCE DESCRIPTION:SEQ ID NO:X: (insert SEQ ID NO where "X" is shown) This sequence is intentionally skipped  Please also adjust the "(ii) NUMBER OF SEQUENCES:" response to <b>include</b> the skipped sequences.	
8 _____ Skipped Sequences (NEW RULES)	Sequence(s) _____ missing. If <b>intentional</b> , please insert the following lines for <b>each</b> skipped sequence. <210> sequence id number <400> sequence id number 000	
9 _____ Use of n's or Xaa's (NEW RULES)	Use of n's and/or Xaa's have been detected in the Sequence Listing. Per 1.823 of Sequence Rules, use of <220>-<223> is <b>MANDATORY</b> if n's or Xaa's are present. In <220> to <223> section, please explain location of <b>n</b> or <b>Xaa</b> , and which residue <b>n</b> or <b>Xaa</b> represents.	
10 _____ Invalid <213> Response	Per 1.823 of Sequence Rules, the only <b>valid</b> <213> responses are: Unknown, Artificial Sequence, or scientific name (Genus/species). <220>-<223> section is <b>required</b> when <213> response is Unknown or is Artificial Sequence	
11 _____ Use of <220>	Sequence(s) _____ missing the <220> "Feature" and associated numeric identifiers and responses. Use of <220> to <223> is <b>MANDATORY</b> if <213> "Organism" response is "Artificial Sequence" or "Unknown." Please explain source of genetic material in <220> to <223> section. (See "Federal Register," 06/01/1998, Vol. 63, No. 104, pp. 29631-32) (Sec. 1.823 of Sequence Rules)	
12 _____ PatentIn 2.0 "bug"	Please do not use "Copy to Disk" function of PatentIn version 2.0. This causes a corrupted file, resulting in missing mandatory numeric identifiers and responses (as indicated on raw sequence listing). Instead, please use "File Manager" or any other manual means to copy file to floppy disk.	
13 _____ Misuse of n/Xaa	<b>"n" can only represent a single nucleotide; "Xaa" can only represent a single amino acid</b>	

1) Do NOT use bold  
font. Use a fixed-width  
font (per 1.823  
of sequence Rules)



IFW16

delete extra  
<110> flow <110>  
only once

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/069,381

DATE: 02/01/2006

TIME: 12:00:09

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

suggestion:  
consult  
sequence Rules  
for valid  
format

W--> 2 <110> APPLICANT: Suntory Limited  
W--> 3 <110> APPLICANT: Nippon Paper Industries  
W--> 4 <120> TITLE OF INVENTION: Gene coding for protein participating in signal  
W--> 5 transduction of cytokinin  
W--> 6 <130> FILE REFERENCE: 993776  
C--> 7 <140> CURRENT APPLICATION NUMBER: US/10/069,381  
C--> 7 <141> CURRENT FILING DATE: 2002-02-26  
E--> 7 <160> NUMBER OF SEQ ID 12 (p.19)

see item 4 on  
Err summary  
sheet

## ERRORED SEQUENCES

W--> 8 <210> SEQ ID NO: 1  
9 <211> LENGTH: 3096  
10 <212> TYPE: DNA  
11 <213> ORGANISM: Arabidopsis thaliana  
12 <221> NAME/KEY: CDS  
13 <222> LOCATION: (187)...(2952)  
14 <223> OTHER INFORMATION: Nucleotide sequence coding for histidine protein  
15 kinase  
16 <400> SEQUENCE: 1  
17 gactcttctt cagatctact cactccttct ttctctcctt cttcttcttc atttttccgg 60  
18 tgaccggagt cggagaaggt tctttattca gatcaagggt ctggcttaaa gaaaaaagtt 120  
19 gtttgaattt tgagatttgt ctgggtccatt gtgttgctgt tgttgatga agagaaacct 180  
20 tgatca atg gtc tgt gaa atg gag act gat cag att gag gaa atg gat 228  
21 Met Val Cys Glu Met Glu Thr Asp Gln Ile Glu Glu Met Asp  
22 1 5 10  
23 gtc gaa gtt ttg tct tcg atg tgg ccc gaa gat gtt gga act gaa gct 276  
24 Val Glu Val Leu Ser Ser Met Trp Pro Glu Asp Val Gly Thr Glu Ala  
25 15 20 25 30  
26 gac aaa cag ttc aac gtc gag aaa cct gcc gga gat tta gac acg ttg 324  
27 Asp Lys Gln Phe Asn Val Glu Lys Pro Ala Gly Asp Leu Asp Thr Leu  
28 35 40 45  
29 aaa gaa gtt act atc gag aca cgg acc att gcg gat atg aca cgg tta 372  
30 Lys Glu Val Thr Ile Glu Thr Arg Thr Ile Ala Asp Met Thr Arg Leu  
31 50 55 60  
32 cca aac cta ttg aat tcg act cat caa ggc tcc tct caa cta acc aac 420  
33 Pro Asn Leu Leu Asn Ser Thr His Gln Gly Ser Ser Gln Leu Thr Asn  
34 65 70 75  
35 ctt gtg aaa caa tgg gag tat atg caa gac aac gcg gtt cgg ctg tta 468  
36 Leu Val Lys Gln Trp Glu Tyr Met Gln Asp Asn Ala Val Arg Leu Leu  
37 80 85 90  
38 aaa gaa gag cta aaa aat ctc gat aga cag aga gaa gaa gcc gag gct 516

insert  
this mandatory  
Does Not Comply  
Corrected Diskette Needed  
identify wherever <221>, <222>,  
or <223>

shown  
<220> never  
has a  
response  
it is a  
"header" only

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:09

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

39 Lys Glu Glu Leu Lys Asn Leu Asp Arg Gln Arg Glu Glu Ala Glu Ala  
 40 95 100 105 110  
 41 aaa gag ttg aag atc att gag gag tat aag ttt gag agc aac gag cct 564  
 42 Lys Glu Leu Lys Ile Ile Glu Glu Tyr Lys Phe Glu Ser Asn Glu Pro  
 43 115 120 125  
 44 gag aat gtt ccg gtt ttg gat gag acg agt gat ttg ttc cgc agg ttt 612  
 45 Glu Asn Val Pro Val Leu Asp Glu Thr Ser Asp Leu Phe Arg Arg Phe  
 46 130 135 140  
 47 agg cag aaa aaa cga gat gcc ttg gtc gat agc aag aag att gag atc 660  
 48 Arg Gln Lys Lys Arg Asp Ala Leu Val Asp Ser Lys Lys Ile Glu Ile  
 49 145 150 155  
 50 tat gag gag ttt gac act gtt gca tat tgg aaa cag aag gcg ttg agt 708  
 51 Tyr Glu Glu Phe Asp Thr Val Ala Tyr Trp Lys Gln Lys Ala Leu Ser  
 52 160 165 170  
 53 ctt gag aaa atg ctt gag gcg agt act gag aga gaa agg cga ttg atg 756  
 54 Leu Glu Lys Met Leu Glu Ala Ser Thr Glu Arg Glu Arg Arg Leu Met  
 W--> 55 170 175 180 185 190  
 56 gag aag ctg agt gag agt ttg aaa act atg gag agt cag tca gca ccg 804  
 57 Glu Lys Leu Ser Glu Ser Leu Lys Thr Met Glu Ser Gln Ser Ala Pro  
 58 195 200 205  
 59 gtc caa gag ctt act cag aat ctt aag aga gct gaa ggt ttc ttg cat 852  
 60 Val Gln Glu Leu Thr Gln Asn Leu Lys Arg Ala Glu Gly Phe Leu His  
 61 210 215 220  
 62 ttc ata ctt cag aat gca cct att gtt atg ggc cat cag gat aaa gat 900  
 63 Phe Ile Leu Gln Asn Ala Pro Ile Val Met Gly His Gln Asp Lys Asp  
 64 225 230 235  
 65 tta cgc tac ttg ttc atc tac aac aag tat cct agt tta cgg gaa cag 948  
 66 Leu Arg Tyr Leu Phe Ile Tyr Asn Lys Tyr Pro Ser Leu Arg Glu Gln  
 67 240 245 250  
 68 gac att ttg gga aaa aca gac gtg gag ata ttc cat gga ggt gga gtt 996  
 69 Asp Ile Leu Gly Lys Thr Asp Val Glu Ile Phe His Gly Gly Gly Val  
 70 255 260 265 270  
 71 aaa gaa tct gaa gat ttc aag aga gaa gtt ctt gag aaa gga aaa gct 1044  
 72 Lys Glu Ser Glu Asp Phe Lys Arg Glu Val Leu Glu Lys Gly Lys Ala  
 73 275 280 285  
 74 tca aag aga gag atc aca ttt act aca gat tta ttt gga tca aag acg 1092  
 75 Ser Lys Arg Glu Ile Thr Phe Thr Thr Asp Leu Phe Gly Ser Lys Thr  
 76 290 295 300  
 77 ttt ttg ata tat gtt gag cct gtt tac aac aaa gct ggc gag aaa atc 1140  
 78 Phe Leu Ile Tyr Val Glu Pro Val Tyr Asn Lys Ala Gly Glu Lys Ile  
 79 305 310 315  
 80 ggt ata aac tac atg gga atg gaa gta act gat cag gta gtg aaa agg 1188  
 81 Gly Ile Asn Tyr Met Gly Met Glu Val Thr Asp Gln Val Val Lys Arg  
 82 320 325 330  
 83 gag aaa atg gcg aaa ctt aga gaa gat aac gct gtg aga aag gcg atg 1236  
 84 Glu Lys Met Ala Lys Leu Arg Glu Asp Asn Ala Val Arg Lys Ala Met  
 85 335 340 345 350  
 86 gaa tca gaa ctg aac aag act att cac att aca gag gag aca atg aga 1284  
 87 Glu Ser Glu Leu Asn Lys Thr Ile His Ile Thr Glu Glu Thr Met Arg

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:09

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

```

88          355          360          365
89 gca aag cag atg cta gcg acg atg tct cat gag ata agg tca cca ttg 1332
90 Ala Lys Gln Met Leu Ala Thr Met Ser His Glu Ile Arg Ser Pro Leu
91          370          375          380
92 tca gga gta gtg gga atg gct gag ata ctt tca act aca aaa ctg gat 1380
93 Ser Gly Val Val Gly Met Ala Glu Ile Leu Ser Thr Thr Lys Leu Asp
94          385          390          395
95 aaa gag caa aga cag ttg ttg aat gtc atg atc tct tct ggt gat ttg 1428
96 Lys Glu Gln Arg Gln Leu Leu Asn Val Met Ile Ser Ser Gly Asp Leu
97          400          405          410
98 gtg ctt cag cta atc aac gac att ctt gat ctc tcc aag gtt gaa tca 1476
99 Val Leu Gln Leu Ile Asn Asp Ile Leu Asp Leu Ser Lys Val Glu Ser
100 415          420          425          430
101 ggt gtg atg aga tta gaa gct aca aag ttt cga cca aga gaa gta gtg 1524
102 Gly Val Met Arg Leu Glu Ala Thr Lys Phe Arg Pro Arg Glu Val Val
103          435          440          445
104 aag cat gtg cta cag aca gct gca gca tcg ctg aag aaa tct ttg aca 1572
105 Lys His Val Leu Gln Thr Ala Ala Ala Ser Leu Lys Lys Ser Leu Thr
106          450          455          460
107 tta gaa gga aac att gca gat gat gtt cct att gag gta gtt gga gat 1620
108 Leu Glu Gly Asn Ile Ala Asp Asp Val Pro Ile Glu Val Val Gly Asp
109          465          470          475
110 gtt cta agg att agg cag atc ctc acc aat ttg ata agc aat gct atc 1668
111 Val Leu Arg Ile Arg Gln Ile Leu Thr Asn Leu Ile Ser Asn Ala Ile
112          480          485          490
113 aag ttt aca cat gaa gga aat gta gga atc aaa ctc caa gtg ata tca 1716
114 Lys Phe Thr His Glu Gly Asn Val Gly Ile Lys Leu Gln Val Ile Ser
115 495          500          505          510
116 gaa cca tcc ttt gtg cgg gat aac gca ttg aac gca gac acc gag gaa 1764
117 Glu Pro Ser Phe Val Arg Asp Asn Ala Leu Asn Ala Asp Thr Glu Glu
118          515          520          525
119 cac gaa caa aac ggt ttg acc gag act tca gtt tgg att tgc tgt gac 1812
120 His Glu Gln Asn Gly Leu Thr Glu Thr Ser Val Trp Ile Cys Cys Asp
121          530          535          540
122 gta tgg gac act gga att gga atc cca gaa aac gct ctt cca tgt ttg 1860
123 Val Trp Asp Thr Gly Ile Gly Ile Pro Glu Asn Ala Leu Pro Cys Leu
124          545          550          555
125 ttc aag aag tac atg caa gca agc gct gat cat gcc cgg aaa tac ggt 1908
126 Phe Lys Lys Tyr Met Gln Ala Ser Ala Asp His Ala Arg Lys Tyr Gly
127          560          565          570
128 ggg act ggt ctc gga ctt gct att tgt aaa cag ctg gtt gag tta atg 1956
129 Gly Thr Gly Leu Gly Leu Ala Ile Cys Lys Gln Leu Val Glu Leu Met
130 575          580          585          590
131 gga ggc caa ctc act gtg aca agc cgg gtg agc gaa ggt tca acg ttc 2004
132 Gly Gly Gln Leu Thr Val Thr Ser Arg Val Ser Glu Gly Ser Thr Phe
133          595          600          605
134 aca ttt ata tta ccc tac aaa gtt gga aga tca gat gat tat tca gat 2052
135 Thr Phe Ile Leu Pro Tyr Lys Val Gly Arg Ser Asp Asp Tyr Ser Asp
136          610          615          620

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/069,381

DATE: 02/01/2006

TIME: 12:00:09

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

```

137 gat caa gat gag ttc tct gat atg gcg gat caa caa tct gaa cca gac 2100
138 Asp Gln Asp Glu Phe Ser Asp Met Ala Asp Gln Gln Ser Glu Pro Asp
139      625      630      635
140 gat aca gct gaa gga tat ttc cag ttt aaa ccg ctc tta gga tcg ata 2148
141 Asp Thr Ala Glu Gly Tyr Phe Gln Phe Lys Pro Leu Leu Gly Ser Ile
142      640      645      650
143 tat tcg aat ggc gga ccg ggg atc agc aat gac ttc tta cct cat aaa 2196
144 Tyr Ser Asn Gly Gly Pro Gly Ile Ser Asn Asp Phe Leu Pro His Lys
145 655      660      665      670
146 gtc atg ctt act agt cct att aag ctc atc aat ggt ttt gtc gct gat 2244
147 Val Met Leu Thr Ser Pro Ile Lys Leu Ile Asn Gly Phe Val Ala Asp
148      675      680      685
149 ccc tct aat aac act gga cag agc gag atg cta cag ctt gaa aac ggt 2292
150 Pro Ser Asn Asn Thr Gly Gln Ser Glu Met Leu Gln Leu Glu Asn Gly
151      690      695      700
152 ggt tac atg gat gaa tct aaa ctc gaa acc agt tct ggt cat tgc cct 2340
153 Gly Tyr Met Asp Glu Ser Lys Leu Glu Thr Ser Ser Gly His Cys Pro
154      705      710      715
155 gaa tca gct cac caa tat gag aat gga aat ggt cga tgt ttc tct aag 2388
156 Glu Ser Ala His Gln Tyr Glu Asn Gly Asn Gly Arg Cys Phe Ser Lys
157      720      725      730
158 gaa tct gaa tct tgt agc agt tca caa gct agc tca gaa ggt gga acc 2436
159 Glu Ser Glu Ser Cys Ser Ser Ser Gln Ala Ser Ser Glu Gly Gly Thr
160 735      740      745      750
161 tta gaa atg gag tca gag ctc aca gtt tca tct cat agg gaa gag gaa 2484
162 Leu Glu Met Glu Ser Glu Leu Thr Val Ser Ser His Arg Glu Glu Glu
163      755      760      765
164 aaa gcc gag aca gaa gta aaa gaa aca tca aag cca aag att ttg ctt 2532
165 Lys Ala Glu Thr Glu Val Lys Glu Thr Ser Lys Pro Lys Ile Leu Leu
166      770      775      780
167 gtg gaa gat aat aag atc aac atc atg gtt gca aag tcg atg atg aag 2580
168 Val Glu Asp Asn Lys Ile Asn Ile Met Val Ala Lys Ser Met Met Lys
169      785      790      795
170 cag tta ggc cat acc atg gat att gct aat aat gga gtt gaa gcc ata 2628
171 Gln Leu Gly His Thr Met Asp Ile Ala Asn Asn Gly Val Glu Ala Ile
172      800      805      810
173 acc gcg att aat agc tct agc tac gat ctg gta ctc atg gat gtg tgc 2676
174 Thr Ala Ile Asn Ser Ser Ser Tyr Asp Leu Val Leu Met Asp Val Cys
175 815      820      825      830
176 atg ccg gtg ctc gat ggt tta aaa gct aca aga ctg atc cgt tcg tat 2724
177 Met Pro Val Leu Asp Gly Leu Lys Ala Thr Arg Leu Ile Arg Ser Tyr
178      835      840      845
179 gaa gaa act ggg aac tgg aat gct gca ata gaa gcc gga gta gat ata 2772
180 Glu Glu Thr Gly Asn Trp Asn Ala Ala Ile Glu Ala Gly Val Asp Ile
181      850      855      860
182 tcg aca tcg gag aat gaa caa gtt tgt atg cgt ccc aca aac cgg ctg 2820
183 Ser Thr Ser Glu Asn Glu Gln Val Cys Met Arg Pro Thr Asn Arg Leu
184      865      870      875
185 cct ata atc gcg atg acg gca aat act tta gca gag agt tca gaa gaa 2868

```

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:09

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

186 Pro Ile Ile Ala Met Thr Ala Asn Thr Leu Ala Glu Ser Ser Glu Glu  
 187 880 885 890  
 188 tgt tat gca aat ggt atg gac tcg ttt att tcg aaa cct gta acg ttg 2916  
 189 Cys Tyr Ala Asn Gly Met Asp Ser Phe Ile Ser Lys Pro Val Thr Leu  
 190 895 900 905 910  
 191 caa aaa ctg aga gag tgt ttg caa cag tat ttg cac tgagatttca 2962  
 192 Gln Lys Leu Arg Glu Cys Leu Gln Gln Tyr Leu His  
 193 915 920  
 194 gattttttgtg tttttagat taagaaatgg ttgtgttgta tataaattgt gtaggaaaaa 3022  
 195 agtttttgag agctactaag tagcttctc ttttttagaga tgtatagttc aataaaaaaa 3082  
 196 aaaaaaaaaa aaaa 3096  
 197 <210> SEQ ID NO: 2  
 198 <211> LENGTH: 922  
 199 <212> TYPE: PRT  
 200 ~~<213> ORGANISM: Arabidopsis thaliana~~ *insert*  
 201 ~~<223> OTHER INFORMATION: Amino acid sequence of histidine protein kinase~~ *2207*  
 202 ~~<400> SEQUENCE: 2~~  
 203 Met Val Cys Glu Met Glu Thr Asp Gln Ile Glu Glu Met Asp Val Glu  
 204 1 5 10 15  
 205 Val Leu Ser Ser Met Trp Pro Glu Asp Val Gly Thr Glu Ala Asp Lys  
 206 20 25 30  
 207 Gln Phe Asn Val Glu Lys Pro Ala Gly Asp Leu Asp Thr Leu Lys Glu  
 208 35 40 45  
 209 Val Thr Ile Glu Thr Arg Thr Ile Ala Asp Met Thr Arg Leu Pro Asn  
 210 50 55 60  
 211 Leu Leu Asn Ser Thr His Gln Gly Ser Ser Gln Leu Thr Asn Leu Val  
 212 65 70 75 80  
 213 Lys Gln Trp Glu Tyr Met Gln Asp Asn Ala Val Arg Leu Leu Lys Glu  
 214 85 90 95  
 215 Glu Leu Lys Asn Leu Asp Arg Gln Arg Glu Glu Ala Glu Ala Lys Glu  
 216 100 105 110  
 217 Leu Lys Ile Ile Glu Glu Tyr Lys Phe Glu Ser Asn Glu Pro Glu Asn  
 218 115 120 125  
 219 Val Pro Val Leu Asp Glu Thr Ser Asp Leu Phe Arg Arg Phe Arg Gln  
 220 130 135 140  
 221 Lys Lys Arg Asp Ala Leu Val Asp Ser Lys Lys Ile Glu Ile Tyr Glu  
 222 145 150 155 160  
 223 Glu Phe Asp Thr Val Ala Tyr Trp Lys Gln Lys Ala Leu Ser Leu Glu  
 224 165 170 175  
 225 Lys Met Leu Glu Ala Ser Thr Glu Arg Glu Arg Arg Leu Met Glu Lys  
 226 180 185 190  
 227 Leu Ser Glu Ser Leu Lys Thr Met Glu Ser Gln Ser Ala Pro Val Gln  
 228 195 200 205  
 229 Glu Leu Thr Gln Asn Leu Lys Arg Ala Glu Gly Phe Leu His Phe Ile  
 230 210 215 220  
 231 Leu Gln Asn Ala Pro Ile Val Met Gly His Gln Asp Lys Asp Leu Arg  
 232 225 230 235 240  
 233 Tyr Leu Phe Ile Tyr Asn Lys Tyr Pro Ser Leu Arg Glu Gln Asp Ile  
 234 245 250 255

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

```

235 Leu Gly Lys Thr Asp Val Glu Ile Phe His Gly Gly Gly Val Lys Glu
236          260          265          270
237 Ser Glu Asp Phe Lys Arg Glu Val Leu Glu Lys Gly Lys Ala Ser Lys
238          275          280          285
239 Arg Glu Ile Thr Phe Thr Thr Asp Leu Phe Gly Ser Lys Thr Phe Leu
240          290          295          300
241 Ile Tyr Val Glu Pro Val Tyr Asn Lys Ala Gly Glu Lys Ile Gly Ile
242 305          310          315          320
243 Asn Tyr Met Gly Met Glu Val Thr Asp Gln Val Val Lys Arg Glu Lys
244          325          330          335
245 Met Ala Lys Leu Arg Glu Asp Asn Ala Val Arg Lys Ala Met Glu Ser
246          340          345          350
247 Glu Leu Asn Lys Thr Ile His Ile Thr Glu Glu Thr Met Arg Ala Lys
248          355          360          365
249 Gln Met Leu Ala Thr Met Ser His Glu Ile Arg Ser Pro Leu Ser Gly
250          370          375          380
251 Val Val Gly Met Ala Glu Ile Leu Ser Thr Thr Lys Leu Asp Lys Glu
252 385          390          395          400
253 Gln Arg Gln Leu Leu Asn Val Met Ile Ser Ser Gly Asp Leu Val Leu
254          405          410          415
255 Gln Leu Ile Asn Asp Ile Leu Asp Leu Ser Lys Val Glu Ser Gly Val
256          420          425          430
257 Met Arg Leu Glu Ala Thr Lys Phe Arg Pro Arg Glu Val Val Lys His
258          435          440          445
259 Val Leu Gln Thr Ala Ala Ala Ser Leu Lys Lys Ser Leu Thr Leu Glu
260          450          455          460
261 Gly Asn Ile Ala Asp Asp Val Pro Ile Glu Val Val Gly Asp Val Leu
262 465          470          475          480
263 Arg Ile Arg Gln Ile Leu Thr Asn Leu Ile Ser Asn Ala Ile Lys Phe
264          485          490          495
265 Thr His Glu Gly Asn Val Gly Ile Lys Leu Gln Val Ile Ser Glu Pro
266          500          505          510
267 Ser Phe Val Arg Asp Asn Ala Leu Asn Ala Asp Thr Glu Glu His Glu
268          515          520          525
269 Gln Asn Gly Leu Thr Glu Thr Ser Val Trp Ile Cys Cys Asp Val Trp
270          530          535          540
271 Asp Thr Gly Ile Gly Ile Pro Glu Asn Ala Leu Pro Cys Leu Phe Lys
272 545          550          555          560
273 Lys Tyr Met Gln Ala Ser Ala Asp His Ala Arg Lys Tyr Gly Gly Thr
274          565          570          575
275 Gly Leu Gly Leu Ala Ile Cys Lys Gln Leu Val Glu Leu Met Gly Gly
276          580          585          590
277 Gln Leu Thr Val Thr Ser Arg Val Ser Glu Gly Ser Thr Phe Thr Phe
278          595          600          605
279 Ile Leu Pro Tyr Lys Val Gly Arg Ser Asp Asp Tyr Ser Asp Asp Gln
280          610          615          620
281 Asp Glu Phe Ser Asp Met Ala Asp Gln Gln Ser Glu Pro Asp Asp Thr
282 625          630          635          640
283 Ala Glu Gly Tyr Phe Gln Phe Lys Pro Leu Leu Gly Ser Ile Tyr Ser

```



## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

```

284          645          650          655
285 Asn Gly Gly Pro Gly Ile Ser Asn Asp Phe Leu Pro His Lys Val Met
286          660          665          670
287 Leu Thr Ser Pro Ile Lys Leu Ile Asn Gly Phe Val Ala Asp Pro Ser
288          675          680          685
289 Asn Asn Thr Gly Gln Ser Glu Met Leu Gln Leu Glu Asn Gly Gly Tyr
290          690          695          700
291 Met Asp Glu Ser Lys Leu Glu Thr Ser Ser Gly His Cys Pro Glu Ser
292 705          710          715          720
293 Ala His Gln Tyr Glu Asn Gly Asn Gly Arg Cys Phe Ser Lys Glu Ser
294          725          730          735
295 Glu Ser Cys Ser Ser Ser Gln Ala Ser Ser Glu Gly Gly Thr Leu Glu
296          740          745          750
297 Met Glu Ser Glu Leu Thr Val Ser Ser His Arg Glu Glu Glu Lys Ala
298          755          760          765
299 Glu Thr Glu Val Lys Glu Thr Ser Lys Pro Lys Ile Leu Leu Val Glu
300          770          775          780
301 Asp Asn Lys Ile Asn Ile Met Val Ala Lys Ser Met Met Lys Gln Leu
302 785          790          795          800
303 Gly His Thr Met Asp Ile Ala Asn Asn Gly Val Glu Ala Ile Thr Ala
304          805          810          815
305 Ile Asn Ser Ser Ser Tyr Asp Leu Val Leu Met Asp Val Cys Met Pro
306          820          825          830
307 Val Leu Asp Gly Leu Lys Ala Thr Arg Leu Ile Arg Ser Tyr Glu Glu
308          835          840          845
309 Thr Gly Asn Trp Asn Ala Ala Ile Glu Ala Gly Val Asp Ile Ser Thr
310          850          855          860
311 Ser Glu Asn Glu Gln Val Cys Met Arg Pro Thr Asn Arg Leu Pro Ile
312 865          870          875          880
313 Ile Ala Met Thr Ala Asn Thr Leu Ala Glu Ser Ser Glu Glu Cys Tyr
314          885          890          895
315 Ala Asn Gly Met Asp Ser Phe Ile Ser Lys Pro Val Thr Leu Gln Lys
316          900          905          910
317 Leu Arg Glu Cys Leu Gln Gln Tyr Leu His
318          915          920

```

319 &lt;210&gt; SEQ ID NO: 3

320 &lt;211&gt; LENGTH: 4679

321 &lt;212&gt; TYPE: DNA

322 &lt;213&gt; ORGANISM: Arabidopsis thaliana

W--&gt; 323 &lt;220&gt; FEATURE:

W--&gt; 324 &lt;221&gt; NAME/KEY: exon 1

325 &lt;222&gt; LOCATION: (230) uuu (307)

W--&gt; 326 &lt;221&gt; NAME/KEY: exon 2

327 &lt;222&gt; LOCATION: (865) uuu (1677)

W--&gt; 328 &lt;221&gt; exon 3

329 &lt;222&gt; LOCATION: (1755) uuu(1811)

W--&gt; 330 &lt;221&gt; exon 4

331 &lt;222&gt; LOCATION: (1904) uuu(2131)

W--&gt; 332 &lt;221&gt; exon 5

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

```

333 <222> LOCATION: (2214) uuu(2307)
W--> 334 <221> exon 6
335 <222> LOCATION: (2389) uuu(2595)
W--> 336 <221> exon 7
337 <222> LOCATION: (2697) uuu(2827)
W--> 338 <221> exon 8
339 <222> LOCATION: (2905) uuu(2954)
W--> 340 <221> exon 9
341 <222> LOCATION: (3028) uuu(3209)
W--> 342 <221> exon 10
343 <222> LOCATION: (3306) uuu(3409)
W--> 344 <221> exon 11
345 <222> LOCATION: (3492) uuu(4214)
W--> 346 <221> exon 12
347 <222> LOCATION: (4303) uuu(4467)
W--> 348 <221> exon 13
349 <222> LOCATION: (4557) uuu(4679)
350 <223> OTHER INFORMATION: Nucleotide sequence of genomic DNA coding for hist
351 idine protein kinase
W--> 352 <400> 3
353 gagaaaagaga gagaagagaa gagaagagaa gagatgaata taatatacat tgacctctct 60
354 gtctcatgag caagcacatg tcctctctct ctctctctct ctttctcttc tccgtaaaaa 120
355 aaattaccaa tctttcacaa ttcattcaca tgctcctctc tctttcttca ttggctattc 180
356 tcttcccaat gtcatttga agtttattta ctctactccc gacgaccacg actcttcttc 240
357 agatctactc actccttctt tctctccttc ttcttcttca tttttccggg gaccggagtc 300
358 ggagaaggta aagcttctga tcccttcccc ttctctccgg catactcggt cctctgcttt 360
359 gtctttcggt tttttcattt ctttctgttt cagccttttg catctcgaga cttcatgatt 420
360 acaatttctt tatgtttctc aatgcaagat ttctgtttat aatatatgat cactgatgtc 480
361 aagaataaat caccaaagat ttttttcttt ccatatattt tttccgatca tcgctcaaaa 540
362 aaaagtttca tcgttttaat ttattttcag attttatcgt ttattggtga attttatgat 600
363 cctagttgat aattcaatct gaaaaaagaa actgatacag ttttcttttt gaagctctgc 660
364 aaatttctga tttttaagct cgaatcatat aatttgaagt ttcccgctaa tgttcaatca 720
365 gaattggtcc acacacttag ttgttggtga ccctttgcaa aattctattt tagttcatta 780
366 tttttcacat tttacagatc aagattctct gatggagatg gtttgtcctg actctaacct 840
367 ctgtgtttga aaatatctat acaggttctt tattcagatc aagggttctgg cttaaagaaa 900
368 aaagttgttt gaattttgag atttgtctgg tccattgtgt tgctgttggt gtatgaagag 960
369 aaaccttgat ca 972
370 atg gtc tgt gaa atg gag act gat cag att gag gaa atg gat gtc gaa 1020
371 Met Val Cys Glu Met Glu Thr Asp Gln Ile Glu Glu Met Asp Val Glu
372 1 5 10 15
373 gtt ttg tct tcg atg tgg ccc gaa gat gtt gga act gaa gct gac aaa 1068
374 Val Leu Ser Ser Met Trp Pro Glu Asp Val Gly Thr Glu Ala Asp Lys
375 20 25 30
376 cag ttc aac gtc gag aaa cct gcc gga gat tta gac acg ttg aaa gaa 1116
377 Gln Phe Asn Val Glu Lys Pro Ala Gly Asp Leu Asp Thr Leu Lys Glu
378 35 40 45
379 gtt act atc gag aca cgg acc att gcg gat atg aca cgg tta cca aac 1164
380 Val Thr Ile Glu Thr Arg Thr Ile Ala Asp Met Thr Arg Leu Pro Asn
381 50 55 60

```

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

```

382 cta ttg aat tcg act cat caa ggc tcc tct caa cta acc aac ctt gtg 1212
383 Leu Leu Asn Ser Thr His Gln Gly Ser Ser Gln Leu Thr Asn Leu Val
384 65 70 75 80
385 aaa caa tgg gag tat atg caa gac aac gcg gtt cgg ctg tta aaa gaa 1260
386 Lys Gln Trp Glu Tyr Met Gln Asp Asn Ala Val Arg Leu Leu Lys Glu
387 85 90 95
388 gag cta aaa aat ctc gat aga cag aga gaa gaa gcc gag gct aaa gag 1308
389 Glu Leu Lys Asn Leu Asp Arg Gln Arg Glu Glu Ala Glu Ala Lys Glu
390 100 105 110
391 ttg aag atc att gag gag tat aag ttt gag agc aac gag cct gag aat 1356
392 Leu Lys Ile Ile Glu Glu Tyr Lys Phe Glu Ser Asn Glu Pro Glu Asn
393 115 120 125
394 gtt ccg gtt ttg gat gag acg agt gat ttg ttc cgc agg ttt agg cag 1404
395 Val Pro Val Leu Asp Glu Thr Ser Asp Leu Phe Arg Arg Phe Arg Gln
396 130 135 140
397 aaa aaa cga gat gcc ttg gtc gat agc aag aag att gag atc tat gag 1452
398 Lys Lys Arg Asp Ala Leu Val Asp Ser Lys Lys Ile Glu Ile Tyr Glu
399 145 150 155 160
400 gag ttt gac act gtt gca tat tgg aaa cag aag gcg ttg agt ctt gag 1500
401 Glu Phe Asp Thr Val Ala Tyr Trp Lys Gln Lys Ala Leu Ser Leu Glu
402 165 170 175
403 aaa atg ctt gag gcg agt act gag aga gaa agg cga ttg atg gag aag 1548
404 Lys Met Leu Glu Ala Ser Thr Glu Arg Glu Arg Arg Leu Met Glu Lys
405 180 185 190
406 ctg agt gag agt ttg aaa act atg gag agt cag tca gca ccg gtc caa 1596
407 Leu Ser Glu Ser Leu Lys Thr Met Glu Ser Gln Ser Ala Pro Val Gln
408 195 200 205
409 gag ctt act cag aat ctt aag aga gct gaa ggt ttc ttg cat ttc ata 1644
410 Glu Leu Thr Gln Asn Leu Lys Arg Ala Glu Gly Phe Leu His Phe Ile
411 210 215 220
412 ctt cag aat gca cct att gtt atg ggc cat cag gtaaagtaaa aggtgattct 1697
413 Leu Gln Asn Ala Pro Ile Val Met Gly His Gln
414 225 230 235
415 tgatcttggt ttcgatcttt tcgacttttc tgattctttg ttacttatga gtttcag 1754
416 gat aaa gat tta cgc tac ttg ttc atc tac aac aag tat cct agt tta 1802
417 Asp Lys Asp Leu Arg Tyr Leu Phe Ile Tyr Asn Lys Tyr Pro Ser Leu
418 240 245 250
419 cgg gaa cag gttagaagaa aactttttct tctgttggat ttattgaatc 1851
420 Arg Glu Gln
421 attctctgag gaaatgtgtt taaatcaaaa tctgtttctt actatatttc ag gac 1906
422 Asp
423 255
424 att ttg gga aaa aca gac gtg gag ata ttc cat gga ggt gga gtt aaa 1954
425 Ile Leu Gly Lys Thr Asp Val Glu Ile Phe His Gly Gly Gly Val Lys
426 260 265 270
427 gaa tct gaa gat ttc aag aga gaa gtt ctt gag aaa gga aaa gct tca 2002
428 Glu Ser Glu Asp Phe Lys Arg Glu Val Leu Glu Lys Gly Lys Ala Ser
429 275 280 285
430 aag aga gag atc aca ttt act aca gat tta ttt gga tca aag acg ttt 2050

```

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

431 Lys Arg Glu Ile Thr Phe Thr Thr Asp Leu Phe Gly Ser Lys Thr Phe  
 432 290 295 300  
 433 ttg ata tat gtt gag cct gtt tac aac aaa gct ggc gag aaa atc ggt 2098  
 434 Leu Ile Tyr Val Glu Pro Val Tyr Asn Lys Ala Gly Glu Lys Ile Gly  
 435 305 310 315  
 436 ata aac tac atg gga atg gaa gta act gat cag gttagttagc taaagatttt 2151  
 437 Ile Asn Tyr Met Gly Met Glu Val Thr Asp Gln  
 438 320 325 330  
 439 tgaactattc tataatctat gttctcattt tcacatcttc actggatctt cctgtgttac 2211  
 440 ag gta gtg aaa agg gag aaa atg gcg aaa ctt aga gaa gat aac gct 2258  
 441 Val Val Lys Arg Glu Lys Met Ala Lys Leu Arg Glu Asp Asn Ala  
 442 335 340 345  
 443 gtg aga aag gcg atg gaa tca gaa ctg aac aag act att cac att aca 2306  
 444 Val Arg Lys Ala Met Glu Ser Glu Leu Asn Lys Thr Ile His Ile Thr  
 445 350 355 360  
 446 g gtttgttcaa gttaagcagt gaaagtttta gaaagattaa tgagaaaact 2357  
 447 agacttaggt gttgtgtttt ttcttttgca g ag gag aca atg aga gca aag cag 2411  
 448 Glu Glu Thr Met Arg Ala Lys Gln  
 449 365  
 450 atg cta gcg acg atg tct cat gag ata agg tca cca ttg tca gga gta 2459  
 451 Met Leu Ala Thr Met Ser His Glu Ile Arg Ser Pro Leu Ser Gly Val  
 452 370 375 380 385  
 453 gtg gga atg gct gag ata ctt tca act aca aaa ctg gat aaa gag caa 2507  
 454 Val Gly Met Ala Glu Ile Leu Ser Thr Lys Leu Asp Lys Glu Gln  
 455 390 395 400  
 456 aga cag ttg ttg aat gtc atg atc tct tct ggt gat ttg gtg ctt cag 2555  
 457 Arg Gln Leu Leu Asn Val Met Ile Ser Ser Gly Asp Leu Val Leu Gln  
 458 405 410 415  
 459 cta atc aac gac att ctt gat ctc tcc aag gtt gaa tca g gtacaatata 2605  
 460 Leu Ile Asn Asp Ile Leu Asp Leu Ser Lys Val Glu Ser  
 461 420 425 430  
 462 ctgttttcaa agtttttgat cttgtggtgt ggtcattggt caaatcctcg attacatatg 2665  
 463 ttattttttg gtattgtgtt gttcttttta g gt gtg atg aga tta gaa gct aca 2719  
 464 Gly Val Met Arg Leu Glu Ala Thr  
 465 435  
 466 aag ttt cga cca aga gaa gta gtg aag cat gtg cta cag aca gct gca 2767  
 467 Lys Phe Arg Pro Arg Glu Val Val Lys His Val Leu Gln Thr Ala Ala  
 468 440 445 450  
 469 gca tcg ctg aag aaa tct ttg aca tta gaa gga aac att gca gat gat 2815  
 470 Ala Ser Leu Lys Lys Ser Leu Thr Leu Glu Gly Asn Ile Ala Asp Asp  
 471 455 460 465 470  
 472 gtt cct att gag gttactacac atttcagaaa gagttaaatg tggcaaaagt 2867  
 473 Val Pro Ile Glu  
 474 ctttgtgatc ttaacttttt ttcttttaaa tgtttag gta gtt gga gat gtt cta 2922  
 475 Val Val Gly Asp Val Leu  
 476 475 480  
 477 agg att agg cag atc ctc acc aat ttg ata ag gttctttacc tgattcctgt 2974  
 478 Arg Ile Arg Gln Ile Leu Thr Asn Leu Ile Ser  
 479 485 490

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

```

480 attatttgca taatgacaag tttcgggttcc tgatttggtc aaacgttttg cag c aat 3031
481                                     Asn
482 gct atc aag ttt aca cat gaa gga aat gta gga atc aaa ctc caa gtg 3079
483 Ala Ile Lys Phe Thr His Glu Gly Asn Val Gly Ile Lys Leu Gln Val
484         495             500             505
485 ata tca gaa cca tcc ttt gtg cgg gat aac gca ttg aac gca gac acc 3127
486 Ile Ser Glu Pro Ser Phe Val Arg Asp Asn Ala Leu Asn Ala Asp Thr
487     510             515             520
488 gag gaa cac gaa caa aac ggt ttg acc gag act tca gtt tgg att tgc 3175
489 Glu Glu His Glu Gln Asn Gly Leu Thr Glu Thr Ser Val Trp Ile Cys
490 525             530             535             540
491 tgt gac gta tgg gac act gga att gga atc cca g gcaagcaagc 3219
492 Cys Asp Val Trp Asp Thr Gly Ile Gly Ile Pro
493         545             550
494 aattctgaca aatgaacatg aaaagactaa aaaactccaa ctaacctata tattaacctg 3279
495 gttcatgttt tgggtgttctt gtgcag aa aac gct ctt cca tgt ttg ttc aag 3331
496             Glu Asn Ala Leu Pro Cys Leu Phe Lys
497             555             560
498 aag tac atg caa gca agc gct gat cat gcc cgg aaa tac ggt ggg act 3379
499 Lys Tyr Met Gln Ala Ser Ala Asp His Ala Arg Lys Tyr Gly Gly Thr
500             565             570             575
501 ggt ctc gga ctt gct att tgt aaa cag ctg gtaagctatt attaggattt ta 3431
502 Gly Leu Gly Leu Ala Ile Cys Lys Gln Leu
503     580             585
504 caacacta cagaagaac taatgaagct cgttatccta atctttcttt gtttgtttac 3489
505 ag gtt gag tta atg gga ggc caa ctc act gtg aca agc cgg gtg agc 3536
506 Val Glu Leu Met Gly Gly Gln Leu Thr Val Thr Ser Arg Val Ser
507     590             595             600
E--> 508 gaa ggt tca acg ttc aca ttt ata tta ccc tac aaa gtt gga aga tca 3586
509 Glu Gly Ser Thr Phe Thr Phe Ile Leu Pro Tyr Lys Val Gly Arg Ser
510     605             610             615
511 gat gat tat tca gat gat caa gat gag ttc tct gat atg gcg gat caa 3632
512 Asp Asp Tyr Ser Asp Asp Gln Asp Glu Phe Ser Asp Met Ala Asp Gln
513     620             625             630
514 caa tct gaa cca gac gat aca gct gaa gga tat ttc cag ttt aaa ccg 3680
515 Gln Ser Glu Pro Asp Asp Thr Ala Glu Gly Tyr Phe Gln Phe Lys Pro
516     635             640             645
517 ctc tta gga tcg ata tat tcg aat ggc gga ccg ggg atc agc aat gac 3728
518 Leu Leu Gly Ser Ile Tyr Ser Asn Gly Gly Pro Gly Ile Ser Asn Asp
519 650             655             660             665
520 ttc tta cct cat aaa gtc atg ctt act agt cct att aag ctc atc aat 3776
521 Phe Leu Pro His Lys Val Met Leu Thr Ser Pro Ile Lys Leu Ile Asn
522     670             675             680
523 ggt ttt gtc gct gat ccc tct aat aac act gga cag agc gag atg cta 3824
524 Gly Phe Val Ala Asp Pro Ser Asn Asn Thr Gly Gln Ser Glu Met Leu
525     685             690             695
526 cag ctt gaa aac ggt ggt tac atg gat gaa tct aaa ctc gaa acc agt 3872
527 Gln Leu Glu Asn Gly Gly Tyr Met Asp Glu Ser Lys Leu Glu Thr Ser
528     700             705             710

```

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

```

529 tct ggt cat tgc cct gaa tca gct cac caa tat gag aat gga aat ggt 3920
530 Ser Gly His Cys Pro Glu Ser Ala His Gln Tyr Glu Asn Gly Asn Gly
531 715 720 725
532 cga tgt ttc tct aag gaa tct gaa tct tgt agc agt tca caa gct agc 3968
533 Arg Cys Phe Ser Lys Glu Ser Glu Ser Cys Ser Ser Ser Gln Ala Ser
534 730 735 740 745
535 tca gaa ggt gga acc tta gaa atg gag tca gag ctc aca gtt tca tct 4016
536 Ser Glu Gly Gly Thr Leu Glu Met Glu Ser Glu Leu Thr Val Ser Ser
537 750 755 760
538 cat agg gaa gag gaa aaa gcc gag aca gaa gta aaa gaa aca tca aag 4064
539 His Arg Glu Glu Glu Lys Ala Glu Thr Glu Val Lys Glu Thr Ser Lys
540 765 770 775
541 cca aag att ttg ctt gtg gaa gat aat aag atc aac atc atg gtt gca 4112
542 Pro Lys Ile Leu Leu Val Glu Asp Asn Lys Ile Asn Ile Met Val Ala
543 780 785 790
544 aag tcg atg atg aag cag tta ggc cat acc atg gat att gct aat aat 4160
545 Lys Ser Met Met Lys Gln Leu Gly His Thr Met Asp Ile Ala Asn Asn
546 795 800 805
547 gga gtt gaa gcc ata acc gcg att aat agc tct agc tac gat ctg gta 4208
548 Gly Val Glu Ala Ile Thr Ala Ile Asn Ser Ser Ser Tyr Asp Leu Val
549 810 815 820 825
550 ctc atg gtatgtaaatt tttcttagct ctaaggactt gtccttttca aattcactta 4264
551 Leu Met
552 tatttgaaaa aggcttataa ttcattattgg gttcacag gat gtg tgc atg ccg gtg 4320
553 Asp Val Cys Met Pro Val
554 830
555 ctc gat ggt tta aaa gct aca aga ctg atc cgt tcg tat gaa gaa act 4368
556 Leu Asp Gly Leu Lys Ala Thr Arg Leu Ile Arg Ser Tyr Glu Glu Thr
557 835 840 845
558 ggg aac tgg aat gct gca ata gaa gcc gga gta gat ata tcg aca tcg 4416
559 Gly Asn Trp Asn Ala Ala Ile Glu Ala Gly Val Asp Ile Ser Thr Ser
560 850 855 860 865
561 gag aat gaa caa gtt tgt atg cgt ccc aca aac cgg ctg cct ata atc 4464
562 Glu Asn Glu Gln Val Cys Met Arg Pro Thr Asn Arg Leu Pro Ile Ile
563 870 875 880
564 gcg gtcagtactt cttttttgaa tactaaacac agagatctaa tgcataactt 4517
565 Ala
566 gagaaaaactg atagtcagaa tgcgttgtgg aatgtgcag atg acg gca aat act 4571
567 Met Thr Ala Asn Thr
568 885
569 tta gca gag agt tca gaa gaa tgt tat gca aat ggt atg gac tcg ttt 4619
570 Leu Ala Glu Ser Ser Glu Glu Cys Tyr Ala Asn Gly Met Asp Ser Phe
571 890 895 900
572 att tcg aaa cct gta acg ttg caa aaa ctg aga gag tgt ttg caa cag 4667
573 Ile Ser Lys Pro Val Thr Leu Gln Lys Leu Arg Glu Cys Leu Gln Gln
574 905 910 915
575 tat ttg cac tga 4679
576 Tyr Leu His
577 920

```

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

578 &lt;210&gt; SEQ ID NO: 4

579 &lt;211&gt; LENGTH: 922

580 &lt;212&gt; TYPE: PRT

581 &lt;213&gt; ORGANISM: Arabidopsis thaliana

582 &lt;223&gt; OTHER INFORMATION: Amino acid sequence of histidine protein kinase

583 &lt;400&gt; SEQUENCE: 4

584 Met Val Cys Glu Met Glu Thr Asp Gln Ile Glu Glu Met Asp Val Glu

585 1 5 10 15

586 Val Leu Ser Ser Met Trp Pro Glu Asp Val Gly Thr Glu Ala Asp Lys

587 20 25 30

588 Gln Phe Asn Val Glu Lys Pro Ala Gly Asp Leu Asp Thr Leu Lys Glu

589 35 40 45

590 Val Thr Ile Glu Thr Arg Thr Ile Ala Asp Met Thr Arg Leu Pro Asn

591 50 55 60

592 Leu Leu Asn Ser Thr His Gln Gly Ser Ser Gln Leu Thr Asn Leu Val

593 65 70 75 80

594 Lys Gln Trp Glu Tyr Met Gln Asp Asn Ala Val Arg Leu Leu Lys Glu

595 85 90 95

596 Glu Leu Lys Asn Leu Asp Arg Gln Arg Glu Glu Ala Glu Ala Lys Glu

597 100 105 110

598 Leu Lys Ile Ile Glu Glu Tyr Lys Phe Glu Ser Asn Glu Pro Glu Asn

599 115 120 125

600 Val Pro Val Leu Asp Glu Thr Ser Asp Leu Phe Arg Arg Phe Arg Gln

601 130 135 140

602 Lys Lys Arg Asp Ala Leu Val Asp Ser Lys Lys Ile Glu Ile Tyr Glu

603 145 150 155 160

604 Glu Phe Asp Thr Val Ala Tyr Trp Lys Gln Lys Ala Leu Ser Leu Glu

605 165 170 175

606 Lys Met Leu Glu Ala Ser Thr Glu Arg Glu Arg Arg Leu Met Glu Lys

607 180 185 190

608 Leu Ser Glu Ser Leu Lys Thr Met Glu Ser Gln Ser Ala Pro Val Gln

609 195 200 205

610 Glu Leu Thr Gln Asn Leu Lys Arg Ala Glu Gly Phe Leu His Phe Ile

611 210 215 220

612 Leu Gln Asn Ala Pro Ile Val Met Gly His Gln Asp Lys Asp Leu Arg

613 225 230 235 240

614 Tyr Leu Phe Ile Tyr Asn Lys Tyr Pro Ser Leu Arg Glu Gln Asp Ile

615 245 250 255

616 Leu Gly Lys Thr Asp Val Glu Ile Phe His Gly Gly Gly Val Lys Glu

617 260 265 270

618 Ser Glu Asp Phe Lys Arg Glu Val Leu Glu Lys Gly Lys Ala Ser Lys

619 275 280 285

620 Arg Glu Ile Thr Phe Thr Thr Asp Leu Phe Gly Ser Lys Thr Phe Leu

621 290 295 300

622 Ile Tyr Val Glu Pro Val Tyr Asn Lys Ala Gly Glu Lys Ile Gly Ile

623 305 310 315 320

624 Asn Tyr Met Gly Met Glu Val Thr Asp Gln Val Val Lys Arg Glu Lys

625 325 330 335

626 Met Ala Lys Leu Arg Glu Asp Asn Ala Val Arg Lys Ala Met Glu Ser

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

```

627          340          345          350
628 Glu Leu Asn Lys Thr Ile His Ile Thr Glu Glu Thr Met Arg Ala Lys
629          355          360          365
630 Gln Met Leu Ala Thr Met Ser His Glu Ile Arg Ser Pro Leu Ser Gly
631          370          375          380
632 Val Val Gly Met Ala Glu Ile Leu Ser Thr Thr Lys Leu Asp Lys Glu
633 385          390          395          400
634 Gln Arg Gln Leu Leu Asn Val Met Ile Ser Ser Gly Asp Leu Val Leu
635          405          410          415
636 Gln Leu Ile Asn Asp Ile Leu Asp Leu Ser Lys Val Glu Ser Gly Val
637          420          425          430
638 Met Arg Leu Glu Ala Thr Lys Phe Arg Pro Arg Glu Val Val Lys His
639          435          440          445
640 Val Leu Gln Thr Ala Ala Ala Ser Leu Lys Lys Ser Leu Thr Leu Glu
641          450          455          460
642 Gly Asn Ile Ala Asp Asp Val Pro Ile Glu Val Val Gly Asp Val Leu
643 465          470          475          480
644 Arg Ile Arg Gln Ile Leu Thr Asn Leu Ile Ser Asn Ala Ile Lys Phe
645          485          490          495
646 Thr His Glu Gly Asn Val Gly Ile Lys Leu Gln Val Ile Ser Glu Pro
647          500          505          510
648 Ser Phe Val Arg Asp Asn Ala Leu Asn Ala Asp Thr Glu Glu His Glu
649          515          520          525
650 Gln Asn Gly Leu Thr Glu Thr Ser Val Trp Ile Cys Cys Asp Val Trp
651          530          535          540
652 Asp Thr Gly Ile Gly Ile Pro Glu Asn Ala Leu Pro Cys Leu Phe Lys
653 545          550          555          560
654 Lys Tyr Met Gln Ala Ser Ala Asp His Ala Arg Lys Tyr Gly Gly Thr
655          565          570          575
656 Gly Leu Gly Leu Ala Ile Cys Lys Gln Leu Val Glu Leu Met Gly Gly
657          580          585          590
658 Gln Leu Thr Val Thr Ser Arg Val Ser Glu Gly Ser Thr Phe Thr Phe
659          595          600          605
660 Ile Leu Pro Tyr Lys Val Gly Arg Ser Asp Asp Tyr Ser Asp Asp Gln
661          610          615          620
662 Asp Glu Phe Ser Asp Met Ala Asp Gln Gln Ser Glu Pro Asp Asp Thr
663 625          630          635          640
664 Ala Glu Gly Tyr Phe Gln Phe Lys Pro Leu Leu Gly Ser Ile Tyr Ser
665          645          650          655
666 Asn Gly Gly Pro Gly Ile Ser Asn Asp Phe Leu Pro His Lys Val Met
667          660          665          670
668 Leu Thr Ser Pro Ile Lys Leu Ile Asn Gly Phe Val Ala Asp Pro Ser
669          675          680          685
670 Asn Asn Thr Gly Gln Ser Glu Met Leu Gln Leu Glu Asn Gly Gly Tyr
671          690          695          700
672 Met Asp Glu Ser Lys Leu Glu Thr Ser Ser Gly His Cys Pro Glu Ser
673 705          710          715          720
674 Ala His Gln Tyr Glu Asn Gly Asn Gly Arg Cys Phe Ser Lys Glu Ser
675          725          730          735

```



## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

```

676 Glu Ser Cys Ser Ser Ser Gln Ala Ser Ser Glu Gly Gly Thr Leu Glu
677      740      745      750
678 Met Glu Ser Glu Leu Thr Val Ser Ser His Arg Glu Glu Glu Lys Ala
679      755      760      765
680 Glu Thr Glu Val Lys Glu Thr Ser Lys Pro Lys Ile Leu Leu Val Glu
681      770      775      780
682 Asp Asn Lys Ile Asn Ile Met Val Ala Lys Ser Met Met Lys Gln Leu
683 785      790      795      800
684 Gly His Thr Met Asp Ile Ala Asn Asn Gly Val Glu Ala Ile Thr Ala
685      805      810      815
686 Ile Asn Ser Ser Ser Tyr Asp Leu Val Leu Met Asp Val Cys Met Pro
687      820      825      830
688 Val Leu Asp Gly Leu Lys Ala Thr Arg Leu Ile Arg Ser Tyr Glu Glu
689      835      840      845
690 Thr Gly Asn Trp Asn Ala Ala Ile Glu Ala Gly Val Asp Ile Ser Thr
691      850      855      860
692 Ser Glu Asn Glu Gln Val Cys Met Arg Pro Thr Asn Arg Leu Pro Ile
693 865      870      875      880
694 Ile Ala Met Thr Ala Asn Thr Leu Ala Glu Ser Ser Glu Glu Cys Tyr
695      885      890      895
696 Ala Asn Gly Met Asp Ser Phe Ile Ser Lys Pro Val Thr Leu Gln Lys
697      900      905      910
698 Leu Arg Glu Cys Leu Gln Gln Tyr Leu His
699      915      920

```

937 &lt;210&gt; SEQ ID NO: 6

938 &lt;211&gt; LENGTH: 922

939 &lt;212&gt; TYPE: PRT

940 &lt;213&gt; ORGANISM: Arabidopsis thaliana

941 &lt;223&gt; OTHER INFORMATION: Amino acid sequence of histidine protein kinase

942 &lt;400&gt; SEQUENCE: 6

```

943 Met Val Cys Glu Met Glu Thr Asp Gln Ile Glu Glu Met Asp Val Glu
944 1      5      10      15
945 Val Leu Ser Ser Met Trp Pro Glu Asp Val Gly Thr Glu Ala Asp Lys
946      20      25      30
947 Gln Phe Asn Val Glu Lys Pro Ala Gly Asp Leu Asp Thr Leu Lys Glu
948      35      40      45
949 Val Thr Ile Glu Thr Arg Thr Ile Ala Asp Met Thr Arg Leu Pro Asn
950      50      55      60
951 Leu Leu Asn Ser Thr His Gln Gly Ser Ser Gln Leu Thr Asn Leu Val
952 65      70      75      80
953 Lys Gln Trp Glu Tyr Met Gln Asp Asn Ala Val Arg Leu Leu Lys Glu
954      85      90      95
955 Glu Leu Lys Asn Leu Asp Arg Gln Arg Glu Glu Ala Glu Ala Lys Glu
956      100      105      110
957 Leu Lys Ile Ile Glu Glu Tyr Lys Phe Glu Ser Asn Glu Pro Glu Asn
958      115      120      125
959 Val Pro Val Leu Asp Glu Thr Ser Asp Leu Phe Arg Arg Phe Arg Gln
960      130      135      140
961 Lys Lys Arg Asp Ala Leu Val Asp Ser Lys Lys Ile Glu Ile Tyr Glu

```

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

```

962 145          150          155          160
963 Glu Phe Asp Thr Val Ala Tyr Trp Lys Gln Lys Ala Leu Ser Leu Glu
964          165          170          175
965 Lys Met Leu Glu Ala Ser Thr Glu Arg Glu Arg Arg Leu Met Glu Lys
966          180          185          190
967 Leu Ser Glu Ser Leu Lys Thr Met Glu Ser Gln Ser Ala Pro Val Gln
968          195          200          205
969 Glu Leu Thr Gln Asn Leu Lys Arg Ala Glu Gly Phe Leu His Phe Ile
970          210          215          220
971 Leu Gln Asn Ala Pro Ile Val Met Gly His Gln Asp Lys Asp Leu Arg
972 225          230          235          240
973 Tyr Leu Phe Ile Tyr Asn Lys Tyr Pro Ser Leu Arg Glu Gln Asp Ile
974          245          250          255
975 Leu Gly Lys Thr Asp Val Glu Ile Phe His Gly Gly Gly Val Lys Glu
976          260          265          270
977 Ser Glu Asp Phe Lys Arg Glu Val Leu Glu Lys Gly Lys Ala Ser Lys
978          275          280          285
979 Arg Glu Ile Thr Phe Thr Thr Asp Leu Phe Gly Ser Lys Thr Phe Leu
980          290          295          300
981 Ile Tyr Val Glu Pro Val Tyr Asn Lys Ala Gly Glu Lys Ile Gly Ile
982 305          310          315          320
983 Asn Tyr Met Gly Met Glu Val Thr Asp Gln Val Val Lys Arg Glu Lys
984          325          330          335
985 Met Ala Lys Leu Arg Glu Asp Asn Ala Val Arg Lys Ala Met Glu Ser
986          340          345          350
987 Glu Leu Asn Lys Thr Ile His Ile Thr Glu Glu Thr Met Arg Ala Lys
988          355          360          365
989 Gln Met Leu Ala Thr Met Ser His Glu Ile Arg Ser Pro Leu Ser Gly
990          370          375          380
991 Val Val Gly Met Ala Glu Ile Leu Ser Thr Thr Lys Leu Asp Lys Glu
992 385          390          395          400
993 Gln Arg Gln Leu Leu Asn Val Met Ile Ser Ser Gly Asp Leu Val Leu
994          405          410          415
995 Gln Leu Ile Asn Asp Ile Leu Asp Leu Ser Lys Val Glu Ser Gly Val
996          420          425          430
997 Met Arg Leu Glu Ala Thr Lys Phe Arg Pro Arg Glu Val Val Lys His
998          435          440          445
999 Val Leu Gln Thr Ala Ala Ala Ser Leu Lys Lys Ser Leu Thr Leu Glu
1000          450          455          460
1001 Gly Asn Ile Ala Asp Asp Val Pro Ile Glu Val Val Gly Asp Val Leu
1002 465          470          475          480
1003 Arg Ile Arg Gln Ile Leu Thr Asn Leu Ile Ser Asn Ala Ile Lys Phe
1004          485          490          495
1005 Thr His Glu Gly Asn Val Gly Ile Lys Leu Gln Val Ile Ser Glu Pro
1006          500          505          510
1007 Ser Phe Val Arg Asp Asn Ala Leu Asn Ala Asp Thr Glu Glu His Glu
1008          515          520          525
1009 Gln Asn Gly Leu Thr Glu Thr Ser Val Trp Ile Cys Cys Asp Val Trp
1010          530          535          540

```

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

```

1011 Asp Thr Gly Ile Gly Ile Pro Glu Asn Ala Leu Pro Cys Leu Phe Lys
1012 545                               550                               555                               560
1013 Lys Tyr Met Gln Ala Ser Ala Asp His Ala Arg Lys Tyr Gly Gly Thr
1014                               565                               570                               575
1015 Gly Leu Gly Leu Ala Ile Cys Lys Gln Leu Val Glu Leu Met Gly Gly
1016                               580                               585                               590
1017 Gln Leu Thr Val Thr Ser Arg Val Asn Glu Gly Ser Thr Phe Thr Phe
1018                               595                               600                               605
1019 Ile Leu Pro Tyr Lys Val Gly Arg Ser Asp Asp Tyr Ser Asp Asp Gln
1020 610                               615                               620
1021 Asp Glu Phe Ser Asp Met Ala Asp Gln Gln Ser Glu Pro Asp Asp Thr
1022 625                               630                               635                               640
1023 Ala Glu Gly Tyr Phe Gln Phe Lys Pro Leu Leu Gly Ser Ile Tyr Ser
1024                               645                               650                               655
1025 Asn Gly Gly Pro Gly Ile Ser Asn Asp Phe Leu Pro His Lys Val Met
1026                               660                               665                               670
1027 Leu Thr Ser Pro Ile Lys Leu Ile Asn Gly Phe Val Ala Asp Pro Ser
1028                               675                               680                               685
1029 Asn Asn Thr Gly Gln Ser Glu Met Leu Gln Leu Glu Asn Gly Gly Tyr
1030 690                               695                               700
1031 Met Asp Glu Ser Lys Leu Glu Thr Ser Ser Gly His Cys Pro Glu Ser
1032 705                               710                               715                               720
1033 Ala His Gln Tyr Glu Asn Gly Asn Gly Arg Cys Phe Ser Lys Glu Ser
1034                               725                               730                               735
1035 Glu Ser Cys Ser Ser Ser Gln Ala Ser Ser Glu Gly Gly Thr Leu Glu
1036                               740                               745                               750
1037 Met Glu Ser Glu Leu Thr Val Ser Ser His Arg Glu Glu Glu Lys Ala
1038                               755                               760                               765
1039 Glu Ile Glu Val Lys Glu Thr Ser Lys Pro Asn Ile Leu Leu Val Glu
1040 770                               775                               780
1041 Asp Asn Lys Ile Asn Ile Met Val Ala Lys Ser Met Met Lys Gln Leu
1042 785                               790                               795                               800
1043 Gly His Thr Met Asp Ile Ala Asn Asn Gly Val Glu Ala Ile Thr Ala
1044                               805                               810                               815
1045 Ile Asn Ser Ser Ser Tyr Asp Leu Val Leu Met Asp Val Cys Met Pro
1046                               820                               825                               830
1047 Val Leu Asp Gly Leu Lys Ala Thr Arg Leu Ile Arg Ser Tyr Glu Glu
1048                               835                               840                               845
1049 Thr Gly Asn Trp Asn Ala Ala Ile Glu Ala Gly Val Asp Ile Ser Thr
1050 850                               855                               860
1051 Ser Glu Asn Glu Gln Val Cys Met Arg Pro Thr Asn Arg Leu Pro Ile
1052 865                               870                               875                               880
1053 Ile Ala Met Thr Ala Asn Thr Leu Ala Glu Ser Ser Glu Glu Cys Tyr
1054                               885                               890                               895
1055 Ala Asn Gly Met Asp Ser Phe Ile Ser Lys Pro Val Thr Leu Gln Lys
1056                               900                               905                               910
1057 Leu Arg Glu Cys Leu Gln Gln Tyr Leu His
1058                               915                               920
1059 <210> SEQ ID NO: 7

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/069,381

DATE: 02/01/2006

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

```

1060 <211> LENGTH: 32
1061 <212> TYPE: DNA
1062 <213> ORGANISM: Artificial sequence
W--> 1063 <220> FEATURE:
W--> 1064 <221> NAME/KEY:
1065 <222> LOCATION:
E--> 1066 <233> Primer No. 163
W--> 1067 <400> SEQUENCE: 7
1068 cgcggatcca ccatggtctg tgaaatggag ac
1069 <210> SEQ ID NO: 8
1070 <211> LENGTH: 32
1071 <212> TYPE: DNA
1072 <213> ORGANISM: Artificial sequence
W--> 1073 <220> FEATURE:
W--> 1074 <221> NAME/KEY:
1075 <222> LOCATION:
E--> 1076 <233> Primer No. 154
W--> 1077 <400> SEQUENCE: 8
1078 ccgctcgagt cagtgc aaat actgttgcaa ac
1079 <210> SEQ ID NO: 9
1080 <211> LENGTH: 31
1081 <212> TYPE: DNA
1082 <213> ORGANISM: Artificial sequence
W--> 1083 <220> FEATURE:
W--> 1084 <221> NAME/KEY:
1085 <222> LOCATION:
E--> 1086 <233> Primer No. 177
W--> 1087 <400> SEQUENCE: 9
1088 ggggtacctc agtgcaaata ctgttgcaaa c
1089 <210> SEQ ID NO: 10
1090 <211> LENGTH: 33
1091 <212> TYPE: DNA
1092 <213> ORGANISM: Artificial sequence
W--> 1093 <220> FEATURE:
W--> 1094 <221> NAME/KEY:
1095 <222> LOCATION:
E--> 1096 <233> Primer No. 271
W--> 1097 <400> SEQUENCE: 10
1098 taccggggg taccgtcgac ctgcaggcat gcc
1099 <211> LENGTH: 11
1100 <211> LENGTH: 32
1101 <212> TYPE: DNA
1102 <213> ORGANISM: Artificial sequence
W--> 1103 <220> FEATURE:
W--> 1104 <221> NAME/KEY:

```

Handwritten notes and corrections:

- Next to 1066 <233>: *use*  $\rightarrow$  2237 not 2233
- Next to 1076 <233>:  $\rightarrow$  2237
- Next to 1086 <233>:  $\rightarrow$  2237
- Next to 1096 <233>:  $\rightarrow$  2237
- Next to 1099 <211>:  $\rightarrow$  2107
- Initials: *OK*

## RAW SEQUENCE LISTING

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:10

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

W--> 1105 <222> LOCATION:                      → <223>  
E--> 1106 <233> Primer No. 272

OK  
E--> 1107 <400> SEQUENCE: 11  
OK  
E--> 1108 aaacgacggc cagtgaattc gagttcggca cc  
E--> 1109 <210> SEQ ID NO: 12  
1110 <211> LENGTH: 31  
1111 <212> TYPE: DNA  
1112 <213> ORGANISM: Artificial sequence

W--&gt; 1113 &lt;220&gt; FEATURE:

W--&gt; 1114 &lt;221&gt; NAME/KEY:

1115 <222> LOCATION:                      → <223>  
E--> 1116 <233> Primer No. 162

W--> 1117 <400> SEQUENCE: 12  
1118 cgcggatcca ccatgcttga ggcgagtact g  
E--> 1123 2/31

*Delete*

*last sequence  
in submitted  
file*

32

31

## VERIFICATION SUMMARY

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:11

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

L:3 M:280 W: Numeric Identifier already exists, <110> found multiple times  
L:4 M:283 W: Missing Blank Line separator, <120> field identifier  
L:6 M:283 W: Missing Blank Line separator, <130> field identifier  
L:7 M:270 C: Current Application Number differs, Replaced Current Application No  
L:7 M:271 C: Current Filing Date differs, Replaced Current Filing Date  
L:7 M:283 W: Missing Blank Line separator, <160> field identifier  
L:8 M:283 W: Missing Blank Line separator, <210> field identifier  
L:16 M:200 E: Mandatory Header Field missing, <220> Tag not found for SEQ ID#:1 ✓  
L:16 M:283 W: Missing Blank Line separator, <400> field identifier  
L:55 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:1 ✓  
L:202 M:200 E: Mandatory Header Field missing, <220> Tag not found for SEQ ID#:2 -  
L:202 M:283 W: Missing Blank Line separator, <400> field identifier  
L:323 M:283 W: Missing Blank Line separator, <220> field identifier  
L:324 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3  
L:326 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3  
L:328 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:3  
L:328 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3  
L:330 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:3  
L:330 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3  
L:332 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:3  
L:332 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3  
L:334 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:3  
L:334 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3  
L:336 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:3  
L:336 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3  
L:338 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:3  
L:338 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3  
L:340 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:3  
L:340 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3  
L:342 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:3  
L:342 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3  
L:344 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:3  
L:344 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3  
L:346 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:3  
L:346 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3  
L:348 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:3  
L:348 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:3  
L:352 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:3  
L:352 M:283 W: Missing Blank Line separator, <400> field identifier  
L:448 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 3 ✓  
L:464 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 3 ✓  
L:508 M:254 E: No. of Bases conflict, LENGTH:Input:3586 Counted:3584 SEQ:3 ✓  
L:583 M:200 E: Mandatory Header Field missing, <220> Tag not found for SEQ ID#:4 ✓  
L:583 M:283 W: Missing Blank Line separator, <400> field identifier  
L:704 M:283 W: Missing Blank Line separator, <220> field identifier  
L:705 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:5  
L:707 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:5  
L:709 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:5

## VERIFICATION SUMMARY

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:11

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

L:709 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:5  
 L:711 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:5  
 L:711 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:5  
 L:713 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:5  
 L:713 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:5  
 L:715 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:5  
 L:715 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:5  
 L:717 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:5  
 L:717 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:5  
 L:719 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:5  
 L:719 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:5  
 L:721 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:5  
 L:721 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:5  
 L:723 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:5  
 L:723 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:5  
 L:725 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:5  
 L:725 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:5  
 L:727 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:5  
 L:727 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:5  
 L:731 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:5  
 L:731 M:283 W: Missing Blank Line separator, <400> field identifier  
 L:810 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 5  
 L:826 M:361 W: Invalid Split Codon, Sequence data for SEQ ID#: 5  
 L:942 M:200 E: Mandatory Header Field missing, <220> Tag not found for SEQ ID#:6  
 L:942 M:283 W: Missing Blank Line separator, <400> field identifier  
 L:1063 M:283 W: Missing Blank Line separator, <220> field identifier  
 L:1064 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:7  
 L:1066 M:250 E: Invalid Numeric Identifier, INVALID IDENTIFIER  
 L:1067 M:258 W: Mandatory Feature missing, <223> Tag not found for SEQ#:7, <213>  
 ORGANISM:Artificial sequence  
 L:1067 M:283 W: Missing Blank Line separator, <400> field identifier  
 L:1067 M:258 W: Mandatory Feature missing, <223> Blank for SEQ#:7,Line#:1067  
 L:1073 M:283 W: Missing Blank Line separator, <220> field identifier  
 L:1074 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:8  
 L:1076 M:250 E: Invalid Numeric Identifier, INVALID IDENTIFIER  
 L:1077 M:258 W: Mandatory Feature missing, <223> Tag not found for SEQ#:8, <213>  
 ORGANISM:Artificial sequence  
 L:1077 M:283 W: Missing Blank Line separator, <400> field identifier  
 L:1077 M:258 W: Mandatory Feature missing, <223> Blank for SEQ#:8,Line#:1077  
 L:1083 M:283 W: Missing Blank Line separator, <220> field identifier  
 L:1084 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:9  
 L:1086 M:250 E: Invalid Numeric Identifier, INVALID IDENTIFIER  
 L:1087 M:258 W: Mandatory Feature missing, <223> Tag not found for SEQ#:9, <213>  
 ORGANISM:Artificial sequence  
 L:1087 M:283 W: Missing Blank Line separator, <400> field identifier  
 L:1087 M:258 W: Mandatory Feature missing, <223> Blank for SEQ#:9,Line#:1087  
 L:1093 M:283 W: Missing Blank Line separator, <220> field identifier  
 L:1094 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:10  
 L:1096 M:250 E: Invalid Numeric Identifier, INVALID IDENTIFIER  
 L:1097 M:258 W: Mandatory Feature missing, <223> Tag not found for SEQ#:10, <213>  
 ORGANISM:Artificial sequence  
 L:1097 M:283 W: Missing Blank Line separator, <400> field identifier  
 L:1097 M:258 W: Mandatory Feature missing, <223> Blank for SEQ#:10,Line#:1097

## VERIFICATION SUMMARY

DATE: 02/01/2006

PATENT APPLICATION: US/10/069,381

TIME: 12:00:11

Input Set : A:\PTO.DA.txt

Output Set: N:\CRF4\02012006\J069381.raw

L:1100 M:280 W: Numeric Identifier already exists, Length not replaced.  
L:1103 M:281 W: Numeric Fields not Ordered, <220> not ordered!.  
L:1103 M:283 W: Missing Blank Line separator, <220> field identifier  
L:1104 M:281 W: Numeric Fields not Ordered, <221> not ordered!.  
L:1104 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:11  
L:1105 M:281 W: Numeric Fields not Ordered, <222> not ordered!.  
L:1106 M:250 E: Invalid Numeric Identifier, INVALID IDENTIFIER  
L:1107 M:282 E: Numeric Field Identifier Missing, <210> is required.  
L:1107 M:258 W: Mandatory Feature missing, <223> Tag not found for SEQ#:11, <213>  
ORGANISM:Artificial sequence  
L:1107 M:212 E: (34) Invalid or duplicate Sequence ID Number, SEQUENCE ID NOS:10 differs:11  
L:1107 M:283 W: Missing Blank Line separator, <400> field identifier  
L:1107 M:258 W: Mandatory Feature missing, <223> Blank for SEQ#:11,Line#:1107  
L:1108 M:252 E: No. of Seq. differs, <211> LENGTH:Input:11 Found:32 SEQ:0  
L:1109 M:214 E: (33) Seq.# missing, SEQ ID NO:11  
L:1113 M:283 W: Missing Blank Line separator, <220> field identifier  
L:1114 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:12  
L:1116 M:250 E: Invalid Numeric Identifier, INVALID IDENTIFIER  
L:1117 M:258 W: Mandatory Feature missing, <223> Tag not found for SEQ#:12, <213>  
ORGANISM:Artificial sequence  
L:1117 M:283 W: Missing Blank Line separator, <400> field identifier  
L:1117 M:258 W: Mandatory Feature missing, <223> Blank for SEQ#:12,Line#:1117  
L:1123 M:254 E: No. of Bases conflict, LENGTH:Input:31 Counted:32 SEQ:12  
L:1123 M:320 E: (1) Wrong Nucleic Acid Designator, NUMBER OF INVALID KEYS:2  
L:1123 M:252 E: No. of Seq. differs, <211> LENGTH:Input:31 Found:32 SEQ:12  
L:7 M:203 E: No. of Seq. differs, <160> Number Of Sequences:Input (2) Counted (12)